IN THE UNITED STATE PATENT AND TRADEMARK OFFICE

Applicant:	Michael H. Dunn
Serial No.:	10/816,537
Filed:	April 1, 2004
Title:	Virtual Flip Chart Method and Apparatus
Art Unit:	2629
Examiner:	Sheng, Tom V.
Confirm No.:	9994
Our Ref.:	871462.00024.PA124238-0-US

Commissioner for Patents
PO Box 1450,
Alexandria, Virginia 22313-1450

Declaration

The undersigned declares that:

1.   I am one of the named inventors of the above referenced patent application.

2.   At least as early as June 12, 2003 we had conceived in the United States of embodiments of the present invention with respect to all of the claims listed as claims 1-5, 22, 29, 30, 40, 41, 43, 49-52, 68-71, 88-92, 95, 96 and 101, attached hereto.

3.   Evidencing this is the attached Exhibit A, which is a copy of an internal Virtual Flip Chart summary document describing product features and benefits. The document shows an image of a portable master presentation unit including an interactive flat panel plasma display screen as well as slave presentation units in the form of three printer/eraser type roll down printer units. The master display screen

can be used to alter presented images and communicates wirelessly with the slave presentation units. The slave presentation units each have a surface on which an image can be presented and each has a size that is substantially identical to the size of the master presentation unit presentation surface. The document also teaches that display contents from the master unit can be "sent" to any of the print charts and that the master display may include an on screen user interface to allow simple chart sending. This document contemplates that each slave presenter includes a large scale printer assembly having a roll member, a print applicator and a motivator and that an eraser system may be provided for removing printed information when a new image is flipped to a slave unit for display. In addition this document contemplates that images associated with a presentation session can be stored as a set and recalled to repopulate the presentation units at a subsequent time. This document was developed in the United States and evidences that prior to June 12, 2003 we had already identified important product features that were to eventually form the basis of the claims attached hereto.

4.   Further, the attached Exhibit B is a copy of a letter sent prior to June 12, 2003 from our employer's outside patent counsel Jon Dickinson at the time to myself accurately confirming that prior to June 12, 2003 we had conceived of a system including a plasma type display screen on a portable cart and a roll up type slave presentation unit where images from the plasma display could be flipped to the slave presentation unit to be displayed thereby. Hence, certain embodiments of the claimed invention were conceived in the United States prior to June 12, 2003.

5.   Exhibit C (attached hereto) is a copy of several pages from my notebook dated prior to June 12, 2003 that describe concepts discussed at product

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development meetings that took place prior to June 12, 2003 and that describe a portable cart based plasma display screen and a roll down screen type slave presentation unit. These pages of my notebook were created in the United States prior to June 12, 2003.

6. Exhibit D (attached hereto) is a copy of a first draft of a patent application prepared by outside patent counsel Jon Dickinson prior to October 2, 2003 and sent to myself for review on October 2, 2003 (the document includes some of my corrections) that was prepared prior to the current application that describes several virtual flip chart concepts and clearly shows that we were diligently working with outside patents counsel to prepare and file the current patent application. Ultimately we were dissatisfied with the first draft of the application and elected to work with new outside patent counsel Michael Jaskolski to draft the current patent application which was filed on April 4, 2004. All of these activities took place in the United States.

7. Hence, between June 12, 2003 and April 4, 2004 steps were taken by our employer's outside patent counsel to diligently draft an application (e.g. specification, drawings, IDS, declaration, etc.) covering the invention. All of these activities took place in the United States.

8. Thus, beginning no later than June 12, 2003 those acting on behalf of myself and the other inventors took diligent steps in the United States to constructively reduce to practice claims 1-5, 22, 29, 30, 40, 41, 43, 49-52, 68-71, 88-92, 95, 96 and 101 attached hereto.

The undersigned declare further that all statements made herein based on personal knowledge of the undersigned are true, that all statements made herein

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based on information from third parties are believed to be true, and further that all these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under section 1001 of Title 18 U.S.C., and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: Oct 27 , 2008

Peter Hildebrandt (Inventor)

1.   A presentation system for presenting information to an audience within a space, the system comprising:

a communication network;

a control interface;

a master presentation unit including a processor and a master display screen , the master screen juxtaposed within the space so as to be viewable by the audience within the space, the processor operable to transmit an image displayed on the master screen over the network upon user command issued via the control interface; and

at least a first slave presentation unit including a first slave image presenter operable to receive and present images that are transmitted by the master unit to the first slave unit over the network to the audience within the space.

2.   The system of claim 1 further including at least a second slave presentation unit including a second slave image presenter operable to receive and present images to the audience within the space that are transmitted by the master unit to the second slave unit over the network.

3.   The system of claim 2 wherein the control interface is useable to indicate when an image presented on the master screen is to be transmitted to one of the slave units and also for indicating which of the slave units the image should be transmitted to.

4.   The system of claim 3 wherein the master unit provides at least two buttons that are selectable by a system user to indicate which of the slave units to which an image presented on the master screen is to be transmitted.

5.   The system of claim 4 wherein, after an indication is received that an image is to be transmitted to a slave unit, the processor removes the image to be transmitted from the master display.

6-21.		Not Presented.

22.	The system of claim 1 wherein the master unit includes the control interface.

23-28.		Not Presented.

29.	The system of claim 1 wherein the communication network includes a wireless communication system.

30.	The system of claim 29 wherein the master unit includes a wireless transmitter and the slave unit includes a wireless receiver.

31-39.		Not Presented.

40.	The system of claim 1 wherein each of the master unit and the slave units includes a presentation surface that is substantially vertically oriented.

41.	The system of claim 40 wherein each of the master screen and the presentation surfaces has a width dimension that is greater than two feet and has a height dimension that is greater than two feet.

a. Not Presented.

42.	The system of claim 1 wherein the slave presenter presents images adjacent the master screen.

44-48.		Not Presented.

49.   A presentation system for presenting information to an audience within a space, the system comprising:

a communication network;

a plurality of presentation units, each presentation unit positioned to present images to the audience within the space, at least one of the presentation units being a master unit including a processor and a display screen , the processor operable to transmit images displayed on the display screen over the network to another one of the presentation units upon user command, each of the other presentation units operable to receive and present images to the audience within the space that are transmitted by the master unit to the other unit over the network.

50.   The system of claim 49 wherein each of the other presentation units includes a presentation surface on which the images are presented and wherein each of the screen and presentation surfaces has substantially similar dimensions.

51.   The system of claim 50 wherein height and width dimensions of each of the screen and the presentation units are greater than two feet and two feet, respectively.

52.   The system of claim 50 wherein each of the screen and the presentation surfaces is substantially vertically oriented.

53-67.   Not Presented.

68.   A method for use with a master presentation unit, at least a first slave presentation unit, a communication network and a control interface, the master unit including a processor and a master display screen and the slave unit including a slave presenter, the method for presenting images to an audience within a space, the method comprising the steps of:

locating the master display screen within the space so as to be viewable by the audience within the space;

locating the slave presenter within the space so that an image generated thereby will be viewable by the audience within the space;

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monitoring the control interface for an indication that an image presented on the master screen should be presented via the slave presenter; and

when an indication is received that the image presented on the master screen should be presented via the slave presenter, transmitting the image presented on the master screen to the slave unit for presentation via the communication network.

69.   The method of claim 68 further including the step of, after transmitting to the slave unit, presenting the transmitted image via the slave presenter.

70.   The method of claim 69 further including the step of, after an indication is received that the image presented on the master screen should be presented via the slave presenter, rendering the image on the master screen unobservable.

71.   The method of claim 69 also for use with at least a second slave presentation unit including a second slave presenter, the control interface useable to indicate a specific one of the slave presenters to which an image presented via the master presenter is to be transmitted, the method further including the step of, when an indication is received to transmit the image from the master unit, determining which of the slave units to which to transmit the master image.

72-87.   Not Presented.

88.   A presentation system for presenting information to an audience within a space, system comprising:

a communication network;

a control interface;

a master presentation unit including a processor and a master display screen, the master screen juxtaposed within the space so as to be viewable by the audience within the space;

at least a first slave presentation unit including a first slave image presenter operable to receive and present images that are transmitted by the master 10 unit to the first slave unit over the network to the audience within the space; and

a processor operable to transmit an image displayed on the master screen over the network upon user command via the control interface to the first slave unit.

89.   The system of claim 88 further including at least a second slave presentation unit including a second slave image presenter operable to receive and present images to the audience within the space that are transmitted by the processor to the second slave unit over the network.

90.   The system of claim 89 wherein the control interface is useable to an image presented on the master screen is to be transmitted to one of the slave units and also for indicating which of the slave units the image should be transmitted to.

91.   The system of claim 90 wherein the control interface provides at least two buttons that are selectable by a system user to indicate which of the slave units to which an image presented on the master screen is to be transmitted.

92.   The system of claim 91 wherein, after an indication is received that an image is to be transmitted to a slave unit, the processor removes the image to be transmitted from the master display.

93-94.   Not Presented.

95.   The system of claim 88 wherein, when an image is transmitted to the slave unit, the processor erases the image from the master screen.

96.   The system of claim 88 wherein the master unit includes the control the processor.

97-100   Not Presented.

101.   The system of claim 88 wherein the communication network includes a wireless communication system.
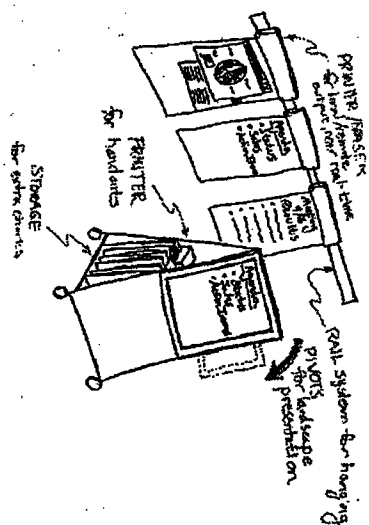
102-104.   Not Presented.

MKE/5786093.01

A

Virtual Flipchart

Rev. A –

Target Market

- Universities, conference centers, corporate conference rooms, and training facilities

Target Pricing

Device	Dealer	Retail
Cart		
Print Chart		

Target Cost

Device	Components	With Labor
Cart (w/o plasma)		
43" plasma		
Print Chart		

Target Volume

- Cart: ████ /year, Print Chart: ████ /year

Cart Features / Benefits

- 43" interactive plasma display works as a virtual flipchart, an interactive laptop

display, and an HDTV-compatible video display

- Wireless network communication to Print Charts – eliminates wires while allowing Print Charts anywhere on WAN to update remotely
- Plasma display rotates for landscape displays
- Display contents can be "sent" to any Print Chart
- Built-in web server holds captured "charts" and allows real-time viewing over web
- Password protection – allows sensitive information to be guarded
- Cart holds hardwired A-sized color printer – allows notebook-sized copies of flipcharts
- Storage for Print Charts below cart
- USB/video cable connects to optional laptop with no software on laptop
- Easy recall of any prior session populates all the Print Charts in the room(s)

Print Chart Features / Benefits

- Color printing system writes contents of display in ink when "sent" from cart. Prior information is simultaneously "erased" from Print Chart.
- Charts roll up like window shades and can be carried with handle, written information is maintained during transportation – allows portability and storage
- Hanging rail system provides power – allows Print Charts to be easily moved about room, but only work with our system

User Interface

- One-button printing and saving to web
- On-screen UI allows simple chart "sending" and status

- Two password lock icon LEDs, one password protection button, and one 4-digit LED display will be added for password protection
- On-screen setup for wireless communications and other settings

Inputs & Outputs

- Cable to laptop: USB/PS-2/Audio/XGA
- USB printer output
- Non-interactive video inputs: Video, S-Video, component, XGA
- 110/240V operation
- Wireless Ethernet with DHCP support

Competitive Analysis

- No direct competition today
- Steelcase Scribe provides capture, but no re-display or video capability
- Interactive plasma displays offer no multiple output destinations

FUMIFU Support

- Supports information persistence, which we believe to inspire future use.
- No computer required. Walk-up and use.

Branding

- Product is branded as PolyVision. Product name TBD.

Items in **RED** are not certain

B

Peter Hildebrandt
PolyVision Corporation
4888 South Old Peachtree Road
Norcross, GA 30071

Re: Virtual Flip-Chart Concepts -- Review in Relation to U.S. Patents Nos. 6,318,825 B1 and 6,379,001 B1 -- File POLY-GEN.003

Dear Peter:

As a follow up to the telephone conversation that we had last Wednesday with respect to the above subject matter, I am writing you this letter to summarize generally the preliminary assessments which I have made respecting the two above-identified patents.

You asked me to look at these patents in relation to a virtual flip-chart development which PolyVision is considering, wherein a portable cart which carries a plasma screen, and which holds appropriate computer and perhaps printer hardware on board, is employed to display an image which can be communicated, at user selection, to an untethered and separated target display. The target display is a very lightweight, portable unit, and as shown to me in a sketch, looks something like a window shade unit that can be hung on a rack, or in some other suitable fashion, in the vicinity of the cart. Hanging of the target device on, for example, a rack, can function conveniently to furnish power to the target device. A roll-up display surface is deployable and retractable with respect to a housing for this target device.

You envision that something displayed on the plasma screen, once communicated to the target device, will cause an erasable visual display to be created on the roll-up display surface with, of course, selective erasing and re-writing of additional and other information on this surface a planned possibility.

You were wondering whether anything about your current stage of preliminary concept development might cause you to be concerned about any of the claims that are present in the two above-identified patents. I have come to a preliminary conclusion that I do not find anything yet in your system, at least as it has been so far described and illustrated to and for me, which suggests that your system will come within the scope of any such claims.

As between these two subject patents, the one which seems considerably more remote from your development than the other is U.S. Patent No. 6,318,825 B1, apparently currently owned by Hewlett-Packard. This patent has its attention focused essentially on a whiteboard-type device, and on a system usable with that kind of a device wherein an image which is written onto a display surface in

the device by a traveling ink-jet-like nozzle system can be scanned by that same system, then erased from the whiteboard display surface, and later re-written back to that surface. In other words, much of the discussion in this patent is about a whiteboard-related system involving (a) the scanning in of an image written onto the surface of such a board, (b) the erasing of that image, and (c) the later re-writing of the scanned-captured image to that very same board. I do not see any *write-copy-erase-rewrite* behavior at all like this suggested for the operation of your proposed virtual flip-chart system.

As I also pointed out to you in discussing this patent over the phone, there are certain provisions at certain locations in the claims which take the form of means-plus-function language, which language will result in the associated portions of the claims containing this language being interpreted fairly narrowly, and quite specifically with a strong focus on the particular structural means (and full equivalents) which is(are) actually described and illustrated in the patent. This kind of claim language, therefore, typically does not open a door to much breadth of coverage.

The second patent, apparently owned by Canon, U.S. Patent No. 6,379,001 B1, involves the writing of images onto, and the erasing of images from, a display surface, with a strong focus being given in the patent to a special relationship regarding the affinity (a) between the writing surface and the material that is deposited on it to produce an image, and (b) between that very same depositable writing material and the device which is employed to remove (erase) a written image from the writing surface. This relationship is expressed in the claims quite specifically (and mathematically) as that existing with respect to certain calculated differences between certain so-called "solubility parameters". In speaking with you about this relationship during our telephone conversation, it appeared to me that, at this point in time, your virtual flip-chart system, etc. is not headed in this direction.

To repeat a statement which I made at the conclusion of our telephone conversation, I suggest that you keep me well informed about the progress of your flip-chart concept development so that that if it begins to appear that you are moving into closer proximity with respect to these two patents, we will be able to spot that movement early.

Please let me know if there is anything further that I can do to assist you at this time.

Sincerely,

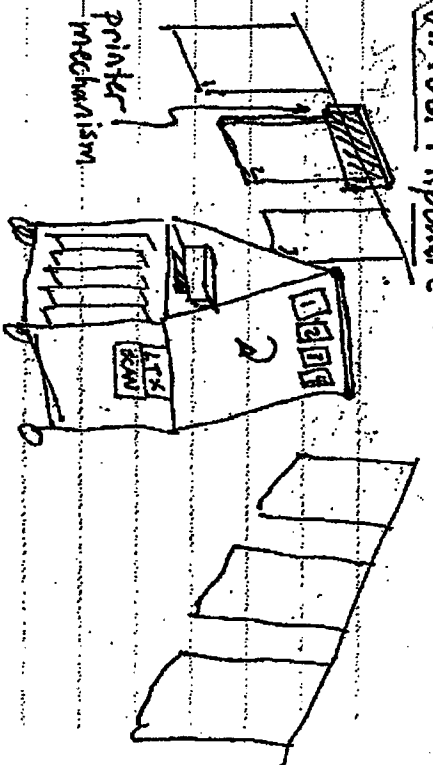Jon M. Dickinson

JMD:mb

C

Branding Meeting

10/7/02 — IDEO

- Impulse

* ▮▮▮▮ — possible
use for electronic whiteboards.

* Write up Virtual Flipchart
(from slides off CopyCom)

Dimensions of Conf. Server organization:

- Room   - Size on disk
- Project   - Date Saved
- Person
Same? ⌐ - Class
      ⌐ - Device
- Media Type (Audio, Document)

→ Virtual Flipchart

printer
mechanism

* Need to do IP Search on this.
Work w/ Rickson @ IDEO.
* Check on heat-based photocopy
∴ Paper replacement. ~~Edison~~
Turned out to be too expensive
edison

* Get surface defects - specs for
  Sidharta & logo (AI)

10/14/02 Virtual Flipchart - Mike Dunn
  - "All Home" button retract
    all of them + or all ashade butt
  - Price of Flip charts < $1,000
    inclusive of hack system
* PVII pricing down on CDGs for
  Flipcharts
* SMART video on website -

* IPM Meeting — Friday 18th
    9-11am —
    - Priorities
    - Steelcase Plan
    Add to Cal

* David Blakely — Virtual (Edged
    Progress)
10/15/02 Erin, Jennifer —
    LTX rollout
* Pre-sales checklist - up to 21st
* Specs for Weekend by Fri 00
* Components & options - get
  reviewed by Mike

* Update LTX literature to Impulse™
(specs, mounting diagrams, etc.)

Jon Dickinson/Jim Watson re:
Patents for Visual Flipchart:

1. Immediate utility patent
   application for VF system

2. Immediate provisional patent
   application for various
   embodiments (and variations)
   of VF.

3. Wait for detailed design for
   additional provisional applications

* look @ sports packages

Classrooms

Jon Dickenson (353) 504-2271

Ability patent for Virtual
Flipchart.
Fee, plus admin his
filing, etc. admin2 patent
4 areas for provisional cases:

1. Display unit as integrated unit
   ▮ total

2. Hangar communication system ▮▮

3. Cart structure w/ monitor
   details - ▮

4. Displays transferring information
   between them - ▮

✓ * Send front panel with
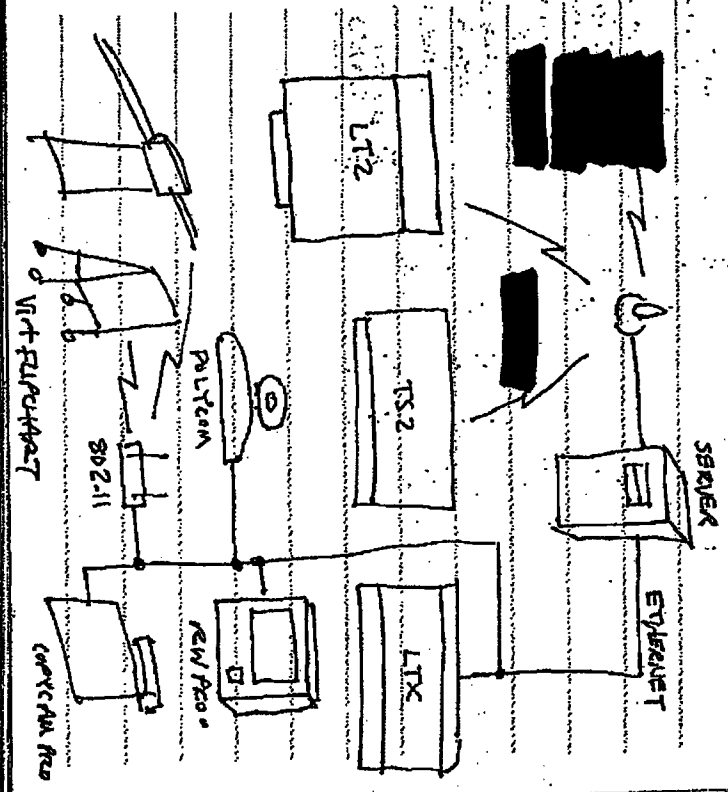
✓ * Update LTx pricing

to Joel

Bmx Utility Patent

1. Container follows contour of light: (small as possible)
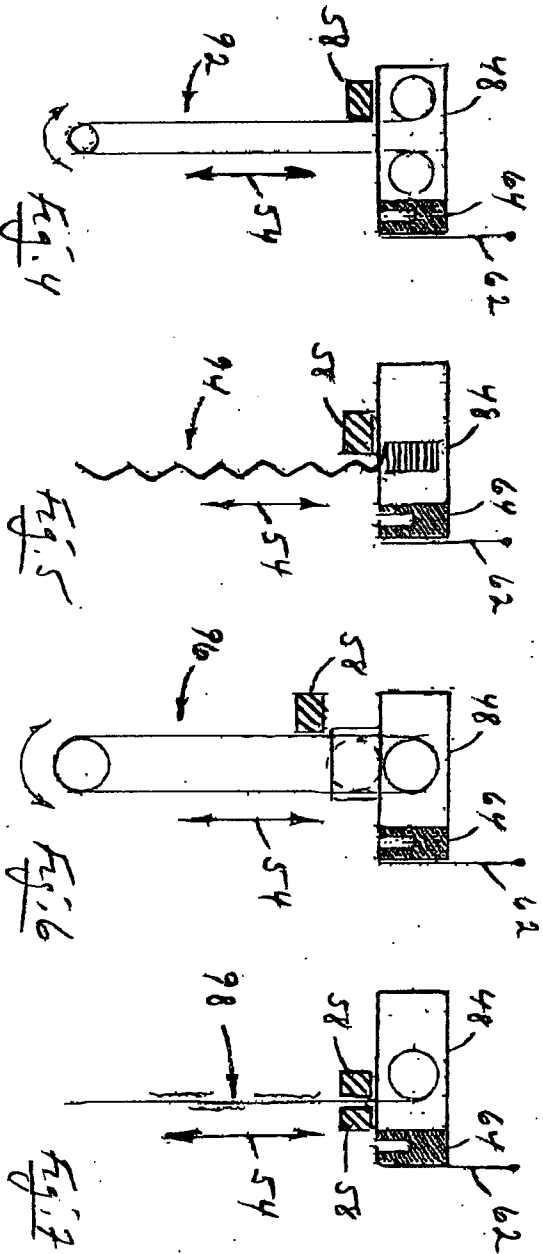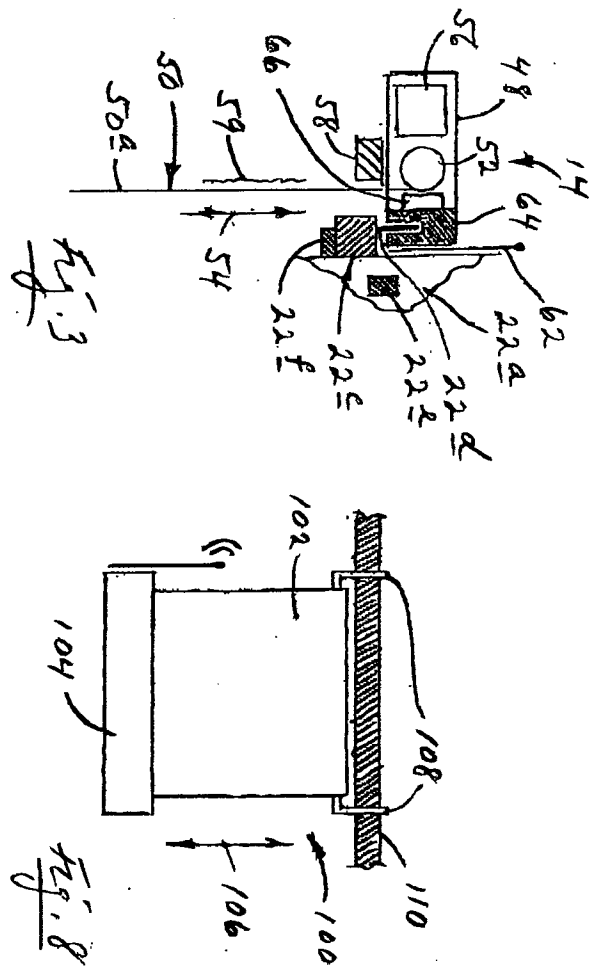2. Use container as Ventilation for light-weight.

Patents Internationally Perused:
1.
2.
3.
4.
5.

*Coordinate w/ Mark re: trip to SFO

D

Fig. 1

Fig. 2

Fig.4

Fig.5

Fig.6

Fig.7

Fig.3

Fig.8

DISTRIBUTED ELECTRONIC FLIP- CHART SYSTEM AND METHODOLOGY

Background and Summary of the Invention

This invention pertains to a network-based (~~wireless or wired~~) electronic flip-chart display system and methodology. In particular, it relates to such a system and methodology which enable ~~distributed, plural-page, simultaneous display, at single or plural~~ *Users to create and utilize multiple images in the same manner they currently use paper flip-charts.* ~~locations, of the same, or different, pages in an electronic flip-chart document.~~ Same-page display is referred to herein as content-synchronous display, and different-page display, as content-asynchronous display. The invention accommodates a wide variety of sources for flip-chart page content, and easily enables page creation, modification, source layering, storing, printing and transmission ~~among other things~~, to respond flexibly to different situations, circumstances, and user desires.

There are many varied applications for this invention. One in particular which is employed for illustration purposes herein, involves the practice of conducting lectures or discussions with groups of people, and especially conducting such events in a manner wherein visual displays (pages) of text and/or pictorial (or other, including motion) imagery, newly created or drawn (as from previously created material) from a wide variety of origination sources, are placed before people for viewing, discussion, modifying, and other relevant activities. Progress through such a visual-display-styled meeting, lecture, discussion, etc., is often enhanced with the use of flip-chart pages, whereby nominally completed flip-chart "pages" are "torn free" from an original-display pad or tablet, and attached in various ways, such as to a wall or to a bulletin board, for ongoing visual reference, and often for collaborative visual reference along with other, similarly placed pages.

In such a group visual-display environment, it is typical for new or fresh pages to be created as time progresses. It is also typical for previously created pages to be modified as needed.

The present invention furnishes an effective, practical, and versatile electronic system and related methodology that function essentially with full analogy to such conventional, manual, "paper" flip-chart practice. The invention, in fact, furnishes such a system which marries, to conventional flip-chart practice modalities, significant additional advantages made possible today in the world of high-speed computer processing and network communication.

From a structural point of view, the system of the invention includes two different types (or categories) of page-display devices, or units. In a preferred implementation of this system, one of these unit types is a floor-standing easel-like unit, and the other is portable, luggage-like unit, hangable on a wall or other suitable upright support structure, and including a housing which carries an extensible and retractable page-display screen (surface structure). All units are network capable, and may communicate with one another in either a wired or wireless fashion.

As will become apparent, the various system units may be designed in different specific ways to function in accordance with practice of the invention, and in one form of system implementation an easel-like unit may itself be foldable and/or collapsible for easy moving from one location to another, and may also be designed in a manner that enables it to "carry" one or more of the mentioned wall-hangable units.

In one preferred form of the system the easel-like unit (or more than one, if desired) takes the form of a controlling master unit which, in addition to presenting its

POLY.1013

own flip-chart page display, is also employed to transmit electronic flip-chart pages to one or more wall-hangable units for display by the these other units. Of course, if more than one master unit is based in a system, each may transmit such information to the other. Such a master or command unit is also one, in such a setting, wherein new flip-

5   chart pages may be created, and existing pages may be freely modified. This master unit also preferably includes a hard-copy printer useable to print page copies for distribution as desired, and may be controlled by a user in its various activities through any appropriate style of user interface, such as (a) a remote control device, (b) actuation buttons or other controls directly provided on the body of the unit, and (c) an optical-

10   tracking, or touch-screen, input instrumentality of various styles which may enable screen-active date-entry and/or mouse functions, etc. Preferably also, such a master unit is equipped with a web browser for the purpose of drawing in web-based content for flip-chart page-display purposes, and is enabled with an appropriate hardware interface for operative connection to an appropriately selected external computer, or to other digital

15   data-handling equipment, such as a scanner, a camera, a video device, etc. Input information may also come from various image-projection apparatus, including motion image apparatus, and the system may be appropriately equipped to capture, and incorporate into a flip-chart page freeze-frame motion data.

In relation to an operative connection between the easel-like unit and an external

20   computer, intelligence structure provided on-board the easel-like unit is designed preferably to enable a user to implement flip-chart page "manipulation" activities either directly under the influence and invocation of the capabilities of the on-board intelligence structure, or through this structure via the invocation and use of intelligence structure

3   POLY.1013

conventionally provided, and appropriately software enabled, in the realm of an attached external computer.

In another form of system constructed and operating in accordance with the present invention, the wall-hangable units may also be capable of transmitting electronic

5 flip-chart page data, and may themselves include appropriate memory and intelligence structure which enables them to store one or more such pages of information, and to create and/or modify displayed page information, as desired.

Various other features and advantages that are attained by the present invention will become more fully apparent as the description which now follows is read in

10 conjunction with the accompanying drawings.

<u>Description of the Drawings</u>

Fig. 1 is a fragmentary drawing illustrating an electronic flip-chart page-display system constructed in accordance with a preferred embodiment of the present invention. Fig. 1 also contains certain illustrative details that picture several ~~interesting~~

15 modifications to the basic system of the invention.

Fig. 2 is ~~somewhat like Fig. 1, except here~~ illustrating a modified form of the invention, *Shown in Fig. 1* wherein both types of the principal page-display units that are employed in the system of the invention are enabled both to transmit, receive and do other things with respect to electronic flip-chart page data over an interconnecting network.

20 Figs. 3-7, inclusive, illustrate schematically several different styles of extensible/retractable page-display surface structures (screens) which may be employed in wall-hangable units in accordance with the invention.

detail each figure out

4   POLY.1013

Fig. 8 illustrates a modified form of wall-hangable unit which operates, ~~in a certain manner of speaking,~~ in a reverse way (vis-a-vis screen deployment) with respect to the other wall-hangable units that are pictured in the other drawing figures.

Detailed Description of the Invention

5   Turning now to the drawings, and referring first of all particularly to Fig. 1, indicated generally at 10 is a distributed, network-based, electronic flip-chart page-display system which is constructed, and which operates, in accordance with a preferred ~~and best-~~mode embodiment of the present invention. System 10 includes two different kinds of mobile and portable page-display units, one of which, a floor-standing, easel-

10   like unit is shown generally at 12, and three of the other kinds of which, hangable in nature as will be explained, are shown generally at 14, 16, 18. Unit 12 is referred to herein as a first-category, or master, unit, and units 14, 16, 18 as second-category units. Units 12-18, inclusive, are suitably equipped to communicate with one another as will be explained over an appropriate interconnecting wired or wireless network, and such a

15   network, preferably wireless in character, is generally represented in Fig. 1 by bracket 20. Units 12-18 thus are equipped ~~by appropriate, respective~~ with on-board computer-like intelligence structure to carry suitable network addresses.

In the preferred embodiment of the invention now being described, network communication between these units is essentially unidirectional, in the sense that master

20   unit 12 is a transmitter of network-carried information (page-display data and certain control commands), and units 14, 16, 18 are receivers only of such information. This communication is represented by enlarged, shaded arrow 21 in Fig. 1.

POLY.1013

System 10, as illustrated, is set up to accommodate a discussion, or conference, which includes two groups of participants gathered at two spaced-apart locations, or environments. Master unit 12 and units 14, 16 are located and commonly viewable within an environment shown generally at 22, and unit 18 is located at, and viewable

5   within, a remote location, or environment, 24. For the purpose of illustration and discussion herein, environments 22, 24 take the form of different gathering spaces that are provided in a common building facility which is represented in Fig. 1 by a bracket 26. Mentioned briefly here for later reference are the presences of walls 22a, 24a (shown fragmentarily) that partially defined sides of environments 22, 24, respectfully. The floor

10   in environment 22, on which unit 12 stands, is shown fragmentarily at 22b.

Unit 12 includes an easel-like stand 28 which may be collapsible ~~or not, as desired,~~ and may be designed with appropriate "rack structure" (suggested by dashed lines 28a) to store one or more hangable units, like units 14, 16, 18. Unit 12 is equipped with a plasma display screen, or display structure, 30 which is appropriately mounted on stand 28.

15   Screen 30 is disposed herein for illustration purposes with a kind of landscape-mode-presented aspect ratio, but this disposition, of course, is merely a matter of choice. Screen 30 "carries" a conventional virtual pen/eraser tracking system 32 which is operable to produce a tracking data stream that follows virtual manual writing and erasing activities that may be performed "on" the surface of screen 30. ← One such tracking system is described in US Pat. No. ——

20   Communicatively coupled to screen 30 and system 32, and further included in owned by Applicant and unit 12 and supported on stand 28, is hardware structure 34 which includes on-board computer intelligence structure 36, a hardware interface which is represented in Fig. 1 incorporated schematically by a double-headed, curved, shadowed arrow 38, and a hard-copy printer herein by reference.

Hardware structure 34 includes an on-board computer intelligence Structure 36. Hardware structure 34, Screen 30, printing system 32 are all communicatively coupled. Hardware structure 34 further includes antenna 41

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40. Shown schematically at 41 is antenna structure which is employed by intelligence structure 36 for the wireless transmission of flip-chart page data, and certain control commands, over network 20.

Intelligence structure 36, ~~which preferably~~ includes suitable memory storage and ~~structure~~, is structured and equipped with appropriate software to enable it to ~~do, under~~ *perform* ~~user control, all of~~ the functions including (a) initiating the display, ~~from any suitable available source,~~ of a flip-chart document page on screen 30, (b) creating, editing and internally storing such a page, and (c) transmitting such a page as page data over network 20 to one or more of units 14, 16, 18.

Page data which is ~~handleable~~ *managed* by system 10 may include elements such as text and all forms of graphics ~~imagery~~ (including motion and freeze-frame imagery). *Intelligence* Structure 36 is also designed (a) to respond appropriately to screen-activity signals coming from tracking system 32, (b) to respond to user input signals created by control buttons ~~shown very generally and schematically by a single rectangle at~~ 42, (c) to respond also to user input signals coming from a user remote control unit 44, and (d) to communicate effectively with the on-board intelligence structure present within an external computer, such as the laptop computer shown at 46, which is coupled to interface 38. Communication is also possible with other types of devices, such as a scanner, a video device, a camera, etc. Finally, intelligence structure 36 is user-controllable to effect hard-copy printing of any selected flip-chart document page which is "present" in system 10, and may ~~function, if desired to~~ produce recorded-disk copies of flip-chart page information. ~~To this latter end,~~ hardware structure 34 may be equipped with appropriate CD and/or floppy disk-handling structure.

Buttons 42, unit 44 and tracking system 32 collectively constitute user-operable, and user-interface, control structure herein.

All of the specific structures and operational capabilities which have just been mentioned are individually conventional, and may be implemented in a variety of

5   different ways well known to those skilled in the art.

Turning attention now to Fig. 3 along with Fig. 1, units 14, 16, 18, as preferably structured, are now described with specific reference to unit 14 (all three of these units being essentially the same in construction). This unit 14 includes an elongate, slender housing 48 which holds an extensible/retractable display-surface structure, or screen, 50.

10   In Figs. 1 and 3, screen 50 is shown fully extended (or deployed) downwardly (pull-out, roller, window-shade style) from housing 48. When retracted, screen 50 resides within the inside of housing 48 in the form of a roll, such as that pictured generally at 52 in Fig. 3. Extension and retraction motion is indicated by double-headed arrow 54 in Fig. 3. Extension and retraction of screen 50 is performed by an appropriate motor, such as the

15   one pictured as a block 56 in Figs. 1 and 3. In the embodiment of system 10 now being described, motor 56 is preferably under the command control of previously mentioned intelligence structure 36.

In its preferred form, screen 50 is made of Mylar®, and is written upon, and erased "from", by suitable conventional deposited-material write/erase structure 58 (see

20   Fig. 3). Very specifically, displayable flip-chart page data is written onto face 50a in screen 50 during extension/deployment of this screen downwardly from housing 48. Erasing takes place during retraction of screen 50. Deposited-material, written-page

information on surface 50a is represented at 59 in Fig. 3. Screen 50 is also referred to herein as a writeable/erasable surface instrumentality.

Within unit 14, control over extension, retraction, writing and erasing activities occur under the influence of on-board computer-like intelligence structure 60 (see Fig. 1)

5   which is disposed within housing 48. Structure 60 is preferably designed conventionally to receive from unit 12 and over wireless network 20 page-data and command instructions as suggested generally by an antenna 62 which is appropriately connected to intelligence structure 60.

Within the construction of unit 14, different conventional kinds of display-surface

10   (screen) materials may be used, and different writing and erasing approaches may be employed. For example, screen 50 might be a flexible electronic image-forming device, or it might be paper dispensed from a supply roll within housing 48. Writing might also take place on and with respect to a static-surface screen material utilizing so-called E-ink. Other modifications are, of course, possible. To illustrate, writing and erasing might be

15   performed by an elongate stationary structure which spans the width of the screen. One might also choose to employ a arm-carried reciprocally translating writing and erasing device.

Completing a description of unit 14 as preferably structured for use in environments such as those shown at 22, 24, walls 22a, 24a in these environments are

20   provided with elongate, suitably anchored railings shown fragmentarily and in cross section (Figs. 1 and 3, respectively) at 22c, 24c, respectively. In the preferred embodiment of the invention, these railings also referred to herein as hanger receptors, include upstanding, elongate ribs such as rib 22d shown in rail 22c in Fig. 3. These

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In order to enhance portability, units 14, 16, 18 have appropriate carrying handles included with their respective housings.

railings and their ribs herein are passive in nature, and serve only the mechanical function

of accommodating selective, removable hanging of units, like units 14, 16, 18, within

environments 22, 24. Each hangable unit, such as unit 14, includes appropriately shaped

hanger structure, such as hanger structure 64 (see Fig. 3) which is provided on the outside

5   of housing 48. Hanging inter-engagement between railing 22c, rib 22d and hangar

structure 64 is clearly pictured in Fig. 3.

~~Not specifically shown in the drawings, but relevant to easy portability of units 14, 16, 18, is the presence of an appropriate carrying handle suitably joined to the housings, such as to housing 48.~~

10   ~~Still looking particularly at Figs. 1 and 3,~~ *A* ~~one~~ modified form of the invention is

suggested *in Figs. 1 & 3* wherein walls 22a, 24a in building facility 26 are equipped with wired

infrastructure *,* such as that shown at 22e, 24e, which preferably includes both electrical

power-supply structure and network connection structure. In this modified form of the

invention, this wired building infrastructure couples appropriately with railing-equipped

15   interface structure, such as that shown in Fig. 3 at 22f. Hanger structure 64, with respect

to such a modification, is furnished with wired throughput structure 66 (see Fig. 3) which

connects through a railing to the building wired infrastructure when unit 14 is hung on a

railing. Under such a circumstance, both electrical operating power and wired network

connectivity are thus offered through the structure which accommodates hanging in place

20   of a unit like unit 14.

Shifting attention now to several other system modifications, Fig. 2 shows, in

~~quite~~ simplified form, a system 70 which includes an easel-like master unit 72, which is

like unit 12, and three other units 74, 76, 78, which are *similar to* ~~like~~ units 14, 16, 18. A network

interconnecting these units is represented by a bracket 80. In this system, units 72, 74 are disposed in a common viewing environment 82, and units 76, 78, are located in a spaced common viewing environment 84. Principally what distinguishes system 70 from system 10 is the fact that the respective intelligence structures that are present in units 74, 76, 78

5   are constructed whereby each of these units can transmit as well as receive flip-chart page data. ~~Broad, shadowed, double-headed curved~~ arrow 86 represents bi-directional transmission capability between master unit 72, and each of units 74, 76, 78. ~~Double-headed, curved~~ arrow 88 represents bi-directional communication between units 74, 76, ~~and double-headed, curved~~ arrow 90 represents such communication between units 74,

10 78.

Figs. 4-7 ~~inclusive,~~ generally illustrate different possible forms for a deployable display structure in units 14, 16, 18, 74, 76, 78. As one can see, Figs. 4-7 function principally to illustrate such different forms in very simple manners. Details of construction are not provided, ~~inasmuch as they form no part of the present invention,~~

15 and can be readily chosen from a wide selection of options well within the skill level of the art.

Fig. 4 shows a pull-out, drop-loop style display surface structure 92. Fig. 5 pictures a pull-out, accordion-style structure 94. Fig. 6 illustrates a pull-out, endless-loop-style display structure 96. Fig. 7 shows a two-side writeable and erasable style

20 structure 98. Write/erase structures in these figures is represented by blocks 58. Appropriate extension and retraction motors, are employed, and the display surface structures may be formed with any appropriate materials.

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Returning for a moment to Fig. 1, yet another modification is suggested in

relation to hangable unit 18. According to this modification, the display "screen"

material here employed is paper which is payed-out downwardly from an appropriate roll

thereof contained within the housing. When an "old page" is to be removed to allow for

5   the writing of a new one, the "old" page is torn away ~~against a suitable cutting edge, such~~ or cut by cutting edge 90

~~as is suggested by the stylized knife blade represented~~ by the slender horizontal triangle

~~shown at~~ 99.

Fig. 8 in the drawings illustrates ~~yet one more interesting~~ another modification of the

invention, wherein a somewhat different form of hangable page-display unit 100 may be

10   employed. Unit 100 deploys and retracts a display surface structure (screen) 102 with

respect to a housing 104 in a reversible manner generally illustrated by double-headed

arrow 106, with housing 104 essentially hanging below screen 102. An appropriate

hanger structure 108, attached to what essentially is the upper edge of screen 102 with the

latter in a deployed condition, is employed to hang unit 100 on a hanger-receptor railing

15   110 which may be like any one of the specific forms of hanger-receptor railings

previously illustrated and described.

Considering now the operation of the invention in the form of system 10, in any

appropriate manner, and with all of the display units in the system essentially powered

and thus activated, a user within environment 22 causes pages in a plural-page flip-chart

20   electronic document to become selectively displayed by different ones of the display

screens that are provided in system 10.

For example, utilizing any one or more of the user-interface control structures

mentioned earlier herein, a flip-chart page of a certain category, such as that which is

generally illustrated at 112 on screen 30 in unit 12 in Fig. 1, is "called-up" for display on the screen. Page 112, which is seen to include text 112a, and a graphic element 112b, may be acquired, as an illustration, (a) from any source containing pre-created flip-chart page-display data, such as from the memory in intelligence structure 36, (b) from some

5   source on the Internet to which network 20 may be connected, (c) from memory storage contained within external laptop computer 46, or (d) from any other suitable source of pre-created page-display material. Additionally, and through utilization of any one or more of the mentioned user-interface control structures, and via operating software which is contained within intelligence structure 36, or perhaps within the intelligence structure

10   resident in an external computer, such as in laptop computer 46, a user may create a new a flip-chart display page which becomes displayed on screen 30. As an illustration, and utilizing tracking system 32, a user may draw and/or write effectively upon screen 30 to cause the elements of such a newly created flip-chart page to become created and displayed.

15   Just with respect to the operation locally of unit 12, any page which is thus created, and/or acquired and displayed, may be stored in the memory portion of intelligence structure 36, and may selectively be printed in hard-copy form, as is shown generally at 113 in Fig. 1, by invocation of printer 40.

         Within environment 22, and as can be seen with respect specifically to hangable

20   display unit 14, and under the appropriate control of any one or more of the mentioned user-interface control structures, a user may cause unit 12 to transmit over network 20 page-display data, with instructions also sent to unit 14 to deploy screen 50, and to
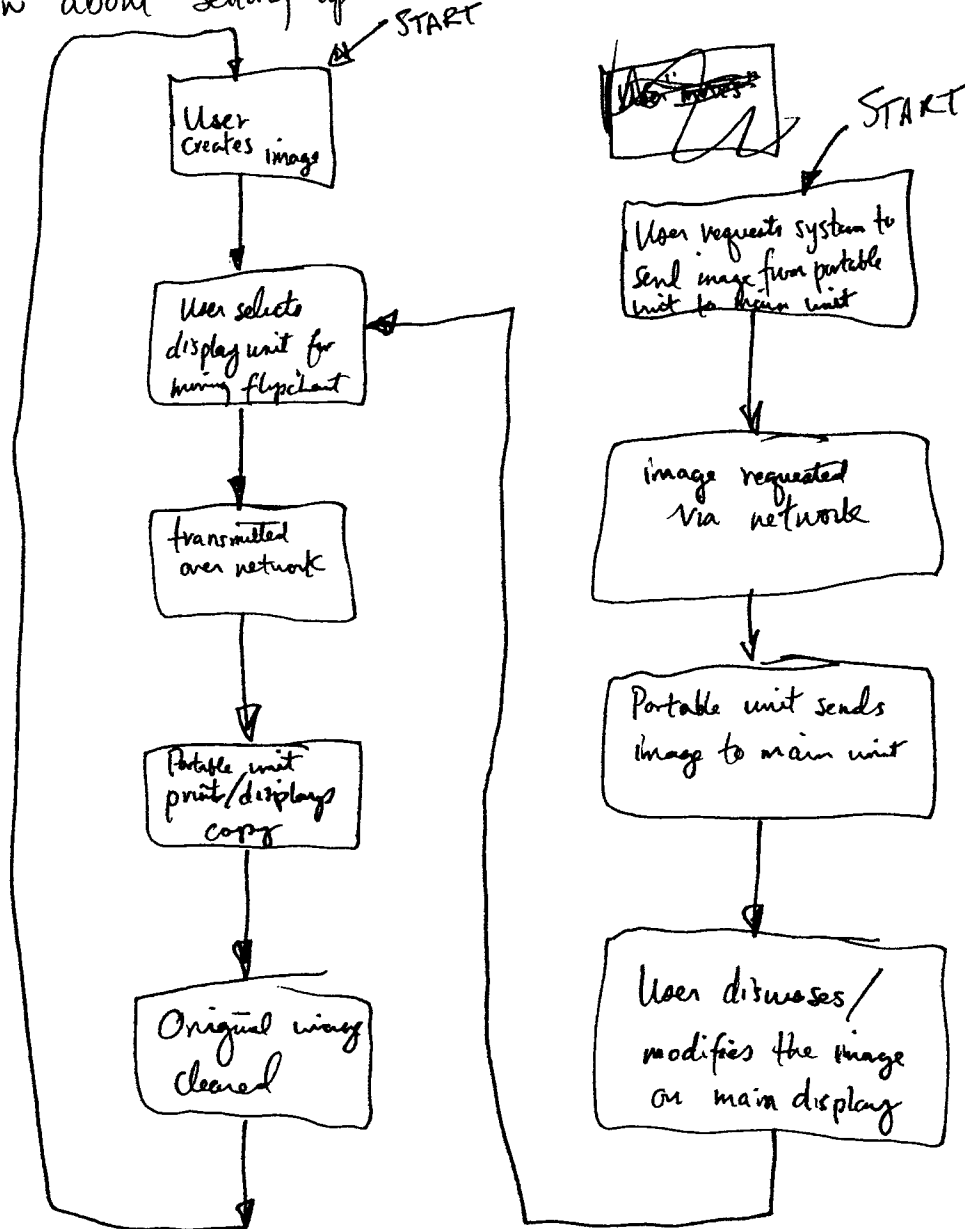
In relation to the operations so far described, it should be understood that the memory structure within intelligence structure 36 may be instructed to store and retain any or all of the several flip-chart pages which collectively make up a particular flip-chart document. Further, any page in that document may be provided appropriately in hard-

5   copy form utilizing printer 40. Additionally, any page currently displayed on screen 30 may be modified and edited in a variety of ways utilizing any one or more of the several user-interface control structures which have been mentioned.

With regard to creating, editing and modifying activities that can take place at the site of unit 12, this unit is preferably constructed in such a fashion that when an external

10   computer, such as computer 46, is connected to this unit, page creation and modification activities, as called for by user-interface structure, can take place in either one of two different modes of operation. In one mode of operation, page data presented on screen 30 may be accessed, created, modified, managed, etc., solely under the direct influence of application software resident within intelligence structure 36. In the other mode of

15   operation, such activities may be handled by effectively utilizing (through structure 36 and interface 38), appropriate application software which has been loaded into a connected, external computer. Thus, the capability of the system of this invention to offer considerable flexibility over flip-chart page-data management is extremely wide and versatile.

20   System 10, because of the obvious mobility which characterizes the structures of the two different kinds of display units, offers wide utility in a number of different situations. Its capability to operate both in synchronous and asynchronous manners with respect to the displays of plural and changeable selected pages from a plural-page flip-

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invention, other variations and modifications are recognized to be possible, will certainly

come to the minds of those generally skilled in the art, and are considered to be within the

scope and territory of the present invention.

How about setting up a method claim:

START

```
┌─────────────┐
│ User        │
│ Creates     │
│        image│
└─────────────┘
      │
      ▼
┌─────────────┐
│ User selects│
│ display unit for│
│ mining flipchart│
└─────────────┘
      │
      ▼
┌─────────────┐
│ transmitted │
│ over network│
└─────────────┘
      │
      ▼
┌─────────────┐
│ Portable unit│
│ print/display│
│    copy     │
└─────────────┘
      │
      ▼
┌─────────────┐
│ Original image│
│ cleaned     │
└─────────────┘
```

START

```
┌──────────────────┐
│ User requests system to│
│ send image from portable│
│ unit to main unit│
└──────────────────┘
      │
      ▼
┌──────────────────┐
│ image requested  │
│   via network    │
└──────────────────┘
      │
      ▼
┌──────────────────┐
│ Portable unit sends│
│ image to main unit│
└──────────────────┘
      │
      ▼
┌──────────────────┐
│ User discusses/  │
│ modifies the image│
│ on main display  │
└──────────────────┘
```

Method of presenting information consisting of the steps of:
  - creating chart
  - moving chart via network to alternative display
  - clearing original display

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A virtual flip-chart system comprising:

A first display unit; and _first_

The first display unit capable of creating an electronic image corresponding to an image created on the display; and
A second display unit; and
The second display unit being capable of creating an image corresponding to an electronic image; and
The first and second display units interconnected wherein upon user activation an electronic image created by the first display unit is electronically transmitted to the second display unit and an image corresponding to the electronic image is created on the second display unit; and
Upon the creation on the second display of the image, the first display can be edited, erased or replaced without affecting the image on the second display unit.

-usual set of dependent claims

A method for using a virtual flip-chart system comprising the following steps: _first_
Providing a first display unit capable of creating an electronic image corresponding to an image created on the display;
Creating an image on the display;
Capturing an electronic image corresponding to the image created on the display;
Providing a second display unit capable of creating an image corresponding to an electronic image;
Upon user selection transmitting the electonic image from the first display to the second display unit;
Creating an image corresponding to the electronic image on the second display unit;
Modifying the image on the first display unit without changing the image displayed on the second display unit.

-plurality of displays with many images;
-recalling images from the secondary display units
-moving the images to different display units
-transmitted over network
-storing a plurality of images to recreate a collection of charts
-storing the series of images to allow recreation of the entire program

First display unit capable of ~~display~~ having images created upon it the first display unit further being capable of ~~creating~~ generating an electronic representation of the image;

Larger scale possibly Remotely Web room

based upon ~~~~

Add discussion of method for using the flipchart system and include a series of method claims.

We also need some discussion added of how the entire flipchart array can be saved and the displayed images erased. This is useful in the circumstance of a shared conference or meeting space. In this situation, when the time elapses and the next meeting is set to start, the user can select the command to store all images currently displayed and the images previously stored during this session and then erase all screens. The next meeting can then begin without concern over the confidentiality of the images on the screens. When the user wishes to reconvene the meeting, he/she can press a button and all the charts are recreated in exactly the same form as when the meeting ended.

Please see additional comments throughout the application.

WE CLAIM:

1.   A distributed, network-based, electronic flip-chart page-display system, capable of both synchronous and asynchronous plural-page-display, said system comprising

an ~~electronic~~ network of ~~its~~ computer devices; and

a first-category page-display unit operable ~~both~~ to display and edit /an electronic flip-chart document page, and to transmit such a page over ~~an appropriate, operatively connected~~ the network upon user ~~activation~~ Selection; and ~~network, and~~

physically
a second-category page-display unit, spaced from said first-category unit, and

over the network
operable to receive, ~~over such an appropriate,~~ ~~operatively connected network, which is~~ ~~also operatively interposed the two units~~ and display, and to display ~~separately~~ a flip-chart document

page which has been ~~network~~ transmitted to it by said first-category unit.

2.   The system of claim 1, wherein said system is deployed with said first-category and second-category page-display units arranged to be simultaneously viewable from within a common viewing environment.

3.   The system of claim 1, wherein said system is deployed with said spaced first-category and second-category units arranged to be viewed separately from within different, separated viewing environments.

~~4. The system of claim 1 and further comprising~~
~~the second unit displaying a flip-chart document page~~
~~the first unit copy~~
the image on the first unit being altered in response to user activity; and
~~H. the second unit receiving~~

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4. The system of claim 1, wherein said first-category unit, with regard to dealing with flip-chart document pages, is additionally configured with structure operable to perform, selectively and optionally, at least one of the tasks drawn from the list

5 consisting of (a) page creating, (b) page editing, and (c) page storing.

5. The system of claim 1, wherein said second-category unit is configured with structure which is operable, selectively and optionally, to store ~~Capable of Storing~~ at least one flip-chart document page transmitted to it from said first-category unit.

10

6. The system of claim 4, wherein said second-category unit is configured with structure operable, selectively and optionally, to store at least one flip-chart document page transmitted to it from said first-category unit.

15 7. The system of claim 1 which further includes user-operable control structure operatively connected to both of said page-display units under circumstances with the two units operatively interconnected via an ~~appropriate~~ _a_ network, said control structure being operable selectively to determine the behavior of said page-display units with respect to their respective page-transmission, page-reception and synchronous and

20 asynchronous page-display activities.

8. The system of claim 1, wherein said first-category unit is a ground-supported unit, and said second-category unit is a wall-hangable unit.

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9.   The system of claim 8, wherein said second-category unit includes both a housing/ and a display-surface structure which is reversibly extensible from, and retractable into, said housing, and said display-surface structure is characterizable by at least one of the structural descriptors drawn from the list consisting of (a) pull-out, roller, window-shade style, (b) pull-out accordion style, (c) pull-out endless-loop style, and (d) pull-out drop-loop style, where the term "pull-out" encompasses any manner of extension from said housing.

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10.   The system of claim 9, wherein said display-surface structure is constructed, with respect to flip-chart page-display behavior, to function in any one of the manners drawn from the list consisting of (a) electronic writing and erasing, (b) deposited-material writing and erasing, and (c) two-sided writing and erasing.

not defined in the specification

11.   The system of claim 10, wherein, with respect to a display-surface structure which is constructed to function in the manner of deposited-material writing and erasing, these two activities are conducted by associated write/erase structure which is carried by said housing, and which conducts writing during extension of the display-surface structure from the housing, and erasing during retraction of the display-surface structure into the housing.

12.   The system of claim 10, wherein said display-surface structure takes the form of a structure which is at least one of (a) an electronic image-forming device, (b) a writeable/erasable surface instrumentality capable of receiving and yielding a visible deposit material, including an electronic ink material, and (c) paper.

13.   The system of claim 12, wherein said second-category unit further includes write/erase structure carried by said housing, and operatively associated with said display-surface structure.

14.   The system of claim 1, wherein said first-category unit includes a printer.

15.   The system of claim 7, wherein said first-category unit is a ground-supported unit, and said second-category unit is a wall-hangable unit.

16.   The system of claim 15 which is intended for use within a building facility having wall structures, and which further includes wall-mountable hanger receptors attachable to such wall structures, and each said second-category unit includes hanger structure which is selectively, hangably, and electronically interactable with a hanger receptor.

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Abstract of the Disclosure

A mobile, distributed, network-based, electronic flip-chart display system and methodology employing both easel-like and wall(or other)-hangable-type, flip-chart page-display units that are network-interconnected (wired or wireless). Each hangable

5   unit is structured as a luggage-like device having a housing and an extensible/retractable page-display screen disposed in the housing. The system and associated methodology of the invention are capable of both synchronous and asynchronous, plural-page, page-content display. During use, flip-chart page data is network-transmitted from an easel-like unit to a hangable unit, and the sending of such data to a hangable unit is

10   accompanied by instructions that effect extension and deployment of the retracted, housed display screen that forms part of this hangable unit.

An electronic flip-chart display system and methodology is disclosed. The electronic flip chart is simple and functions intuitively similar to conventional paper flip-charts. A *material* first unit electronically captures inputs written on the display by the user. The ~~first~~ image captured on the first unit can be displayed on a second unit, allowing the user to create a new image on the first unit without erasing the image.

17. The system of claim 16 with respect to which certain wall structures in the mentioned building facility are equipped with power-supply, and/or data-communication, infrastructure, and wherein each hanger receptor includes interface structure appropriately coupleable with such infrastructure when attached to a building-facility wall structure containing such infrastructure, and each said hangar structure is constructed with throughput structure which , with the hanger structure hangably interacting with a hanger receptor, establishes an operative connection, in cooperation with said interface structure, between the mentioned building-facility infrastructure and the control structure associated with said second-category unit.

18. A network-based method for the distributed display of one or more pages in an electronic flip-chart document comprising

creating at one location a first display of such a flip-chart page which forms part of such a document,

simultaneously creating at another location, which is spaced from the first-mentioned location, a second such display, and

interrelatedly controlling said two creating steps, whereby the mentioned first and second simultaneous displays are characterizable as being one of (a) content-synchronous, and (b) content-asynchronous.

19. The method of claim 18, wherein at least one of the mentioned displays is created in relation to the step of deploying a normally stowed display structure from a retracted condition within a display unit housing toward an extended condition relative to that housing.

20. The method of claim 18, wherein the two displays are presented for viewing by two different display units, and the presentation of one of the two displays which is associated with one of these two units results from the step of network-transmitting, from the other unit, of electronic page data associated with the just-mentioned one display.

21. The method of claim 20, wherein the mentioned one display is presented in relation to the step of deploying a normally stowed display structure from a housing which forms part of the one display unit, and the mentioned transmission of electronic page data to the one display unit also includes the transmission of command data which effects display-structure deployment from the housing in the one unit.

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22.   A distributed, network-based, electronic flip-chart page-display system comprising

a first-category page-display unit operable both to display an electronic flip-chart document page, and to transmit such a page over an appropriate, operatively connected network, and

a second-category page-display unit, spaced from said first-category unit, and operable to receive, over such an appropriate, operatively connected network, which is also operatively interposed the two units, and to display separately, a flip-chart document page which has been network-transmitted to it by said first-category unit, and wherein display of a page which has been transmitted by said first unit to said second unit is associated collaboratively with extension of display structure possessed by the second-category display unit, which display structure is triggered effectively by such page data transmission.

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23. A distributed, network-based, electronic flip-chart page-display system comprising

plural page-display units each operable to display a selected page in a flip-chart document, and including at least one unit which possesses intelligence structure, and a hardware interface operatively connected thereto and enabling the establishment of an operative connection through said interface between the one unit's intelligence structure and intelligence structure contained within an external computer, and

user-interface control structure operatively associated with said one unit, operable selectively by a user to modify the content of a flip-chart page which is displayable in the system, with said control structure and said one unit's intelligence structure collaboratively enabling two different modes of page-content modifying activity, in one of which modes page-content modification is performed, effectively, by invocation of the one unit's intelligence structure, and in the other of which modes such modification is preformed, effectively, through the intelligence structure of said one unit, of such an attached computer's intelligence structure.